

CLAIMS

[1] An infrared sensor, comprising:

a series capacitor element and a reference capacitor element each exhibiting a predetermined capacitance value;

5 an infrared-detecting capacitor element whose capacitance value varies depending on an intensity of infrared light incident on the element; and

an output node being a node at which a first terminal of the series capacitor element, a first terminal of the reference capacitor element and a first terminal of the infrared-detecting capacitor element are connected to one another, wherein:

10 a potential of the output node is brought to a reference potential by applying a predetermined voltage between a second terminal of the series capacitor element and a second terminal of the reference capacitor element;

a potential of the output node is brought to a detection potential by applying the predetermined voltage between the second terminal of the series capacitor element and
15 a second terminal of the infrared-detecting capacitor element; and

the intensity of infrared light is output as a potential difference between the reference potential and the detection potential.

[2] The infrared sensor of claim 1, wherein the capacitance value of the series capacitor element and the capacitance value of the reference capacitor element are equal to
20 the capacitance value of the infrared-detecting capacitor element when there is no infrared light incident on the infrared-detecting capacitor element.

[3] The infrared sensor of claim 1 or 2, further comprising:

a reference capacitor element control switch provided between the first terminal of the reference capacitor element and the output node; and

25 an infrared-detecting capacitor element control switch provided between the first terminal of the infrared-detecting capacitor element and the output node, wherein:

a power supply for supplying the predetermined voltage is connected to the second terminal of the series capacitor element;

the reference potential is obtained by turning ON the reference capacitor element control switch and turning OFF the infrared-detecting capacitor element control switch; and

the detection potential is obtained by turning OFF the reference capacitor element control switch and turning ON the infrared-detecting capacitor element control switch.

[4] An infrared sensor array, comprising a plurality of infrared sensors arranged in a two-dimensional matrix pattern, wherein each infrared sensor includes:

a series capacitor element and a reference capacitor element each exhibiting a predetermined capacitance value;

an infrared-detecting capacitor element whose capacitance value varies depending on an intensity of infrared light incident on the element; and

an output node being a node at which a first terminal of the series capacitor element, a first terminal of the reference capacitor element and a first terminal of the infrared-detecting capacitor element are connected to one another, wherein:

a potential of the output node is brought to a reference potential by applying a predetermined voltage between a second terminal of the series capacitor element and a second terminal of the reference capacitor element;

a potential of the output node is brought to a detection potential by applying the predetermined voltage between the second terminal of the series capacitor element and a second terminal of the infrared-detecting capacitor element; and

the intensity of infrared light is output as a potential difference between the reference potential and the detection potential.

[5] The infrared sensor array of claim 4, wherein the capacitance value of the

series capacitor element and the capacitance value of the reference capacitor element are equal to the capacitance value of the infrared-detecting capacitor element when there is no infrared light incident on the infrared-detecting capacitor element.

[6] The infrared sensor array of claim 3 or 4, wherein each infrared sensor
5 includes:

a reference capacitor element control switch provided between the first terminal of the reference capacitor element and the output node; and

an infrared-detecting capacitor element control switch provided between the first terminal of the infrared-detecting capacitor element and the output node, wherein:

10 a power supply for supplying the predetermined voltage is connected to the second terminal of the series capacitor element;

the reference potential is obtained by turning ON the reference capacitor element control switch and turning OFF the infrared-detecting capacitor element control switch; and

15 the detection potential is obtained by turning OFF the reference capacitor element control switch and turning ON the infrared-detecting capacitor element control switch.

[7] The infrared sensor array of claim 4 or 5, further comprising a differential circuit section for storing the reference potential and the detection potential, and for
20 outputting a difference between the stored reference potential and the stored detection potential.

[8] The infrared sensor array of claim 7, further comprising an impedance conversion circuit or an amplifier circuit provided between each output node and each differential circuit section.

25 [9] The infrared sensor array of any of claims 4 to 8, wherein a predetermined group of two or more of infrared sensors, among the plurality of infrared sensors, share at

least one of the series capacitor element and the reference capacitor element.

[10] The infrared sensor array of any of claims 4 to 8, wherein a group of infrared sensors, among the plurality of infrared sensors, that are connected to the same row or the same column of the matrix pattern share at least one of the series capacitor element and the reference capacitor element.

[11] The infrared sensor array of any of claims 4 to 10, further comprising:
a sensor selecting circuit section for selecting one of the plurality of infrared sensors; and

a charge storage circuit section for accumulating a charge according to the potential difference output from the selected infrared sensor over a predetermined number of times, and for outputting a charge obtained by combining together the charge accumulated over the predetermined number of times, wherein:

the charge storage circuit section includes a plurality of capacitor elements connected between a terminal receiving the potential difference and a ground each via a switch therebetween;

the charge storage circuit section includes a driving circuit for driving the switch; and

a charge is stored in each capacitor element.

[12] An infrared sensor array, comprising:

a plurality of infrared sensors arranged in a two-dimensional matrix pattern;
and

a plurality of series capacitor elements each exhibiting a predetermined capacitance value, wherein:

each infrared sensor includes an infrared-detecting capacitor element whose capacitance value varies depending on an intensity of infrared light incident on the element, and a selection switch whose first terminal is connected to a first terminal of the infrared-

detecting capacitor element; and

second terminals of the selection switches included in the infrared sensors that are arranged along the same column of the matrix pattern all share the same series capacitor element.